

1. Simplify.

$$a) (4x^5y^6)(20x^7y^4) = 80x^{12}y^{10}$$

5+7      6+4

$$b) \frac{36x^{12}y^4}{4xy^2} = 9x^{11}y^2$$

12-1      4-2

$$c) 17y^0 = 17 \cdot 1 = 17$$

$$d) x^3y^{-4} = \frac{x^3}{y^4}$$

$$e) \frac{x^{-3}}{y^{-7}} = \frac{y^7}{x^3}$$

$$f) (3x^2y)^4 = 81x^8y^4$$

$$g) \left(-\frac{2x}{y}\right)^5 = -\frac{32x^5}{y^5}$$

$$h) \frac{15x^2}{3x^{11}} = 5x^{-9} = \boxed{\frac{5}{x^9}}$$

$$i) \frac{24x^2y^{13}}{-2x^5y^{-2}} = -12x^{-3}y^{15}$$

$$= \boxed{\frac{-12y^{15}}{x^3}}$$

$$j) \left(\frac{4a^{-5}b^3}{12a^3b^{-5}}\right)^0 = \boxed{1}$$

$$k) \left(\frac{x^6y^{-7}}{2}\right)^{-3} = \frac{x^{-18}y^{21}}{2^{-3}}$$

$$= \frac{2^3y^{21}}{x^{18}}$$

$$= \boxed{\frac{8y^{21}}{x^{18}}}$$